

J. KIDD.

MACHINERY FOR DISHING METALS.

No. 185,547.

Patented Dec. 19, 1876.

Fig. 1.

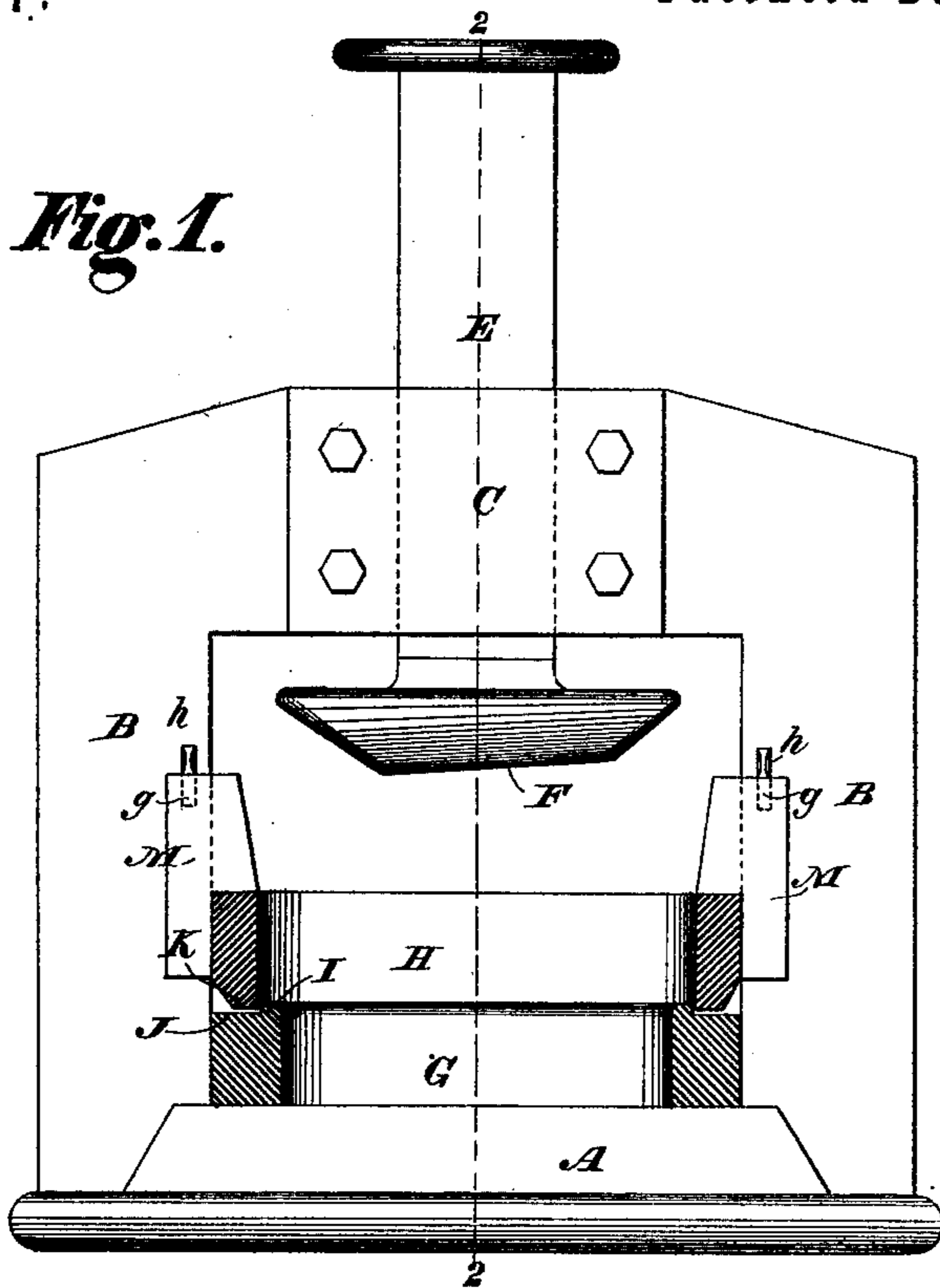
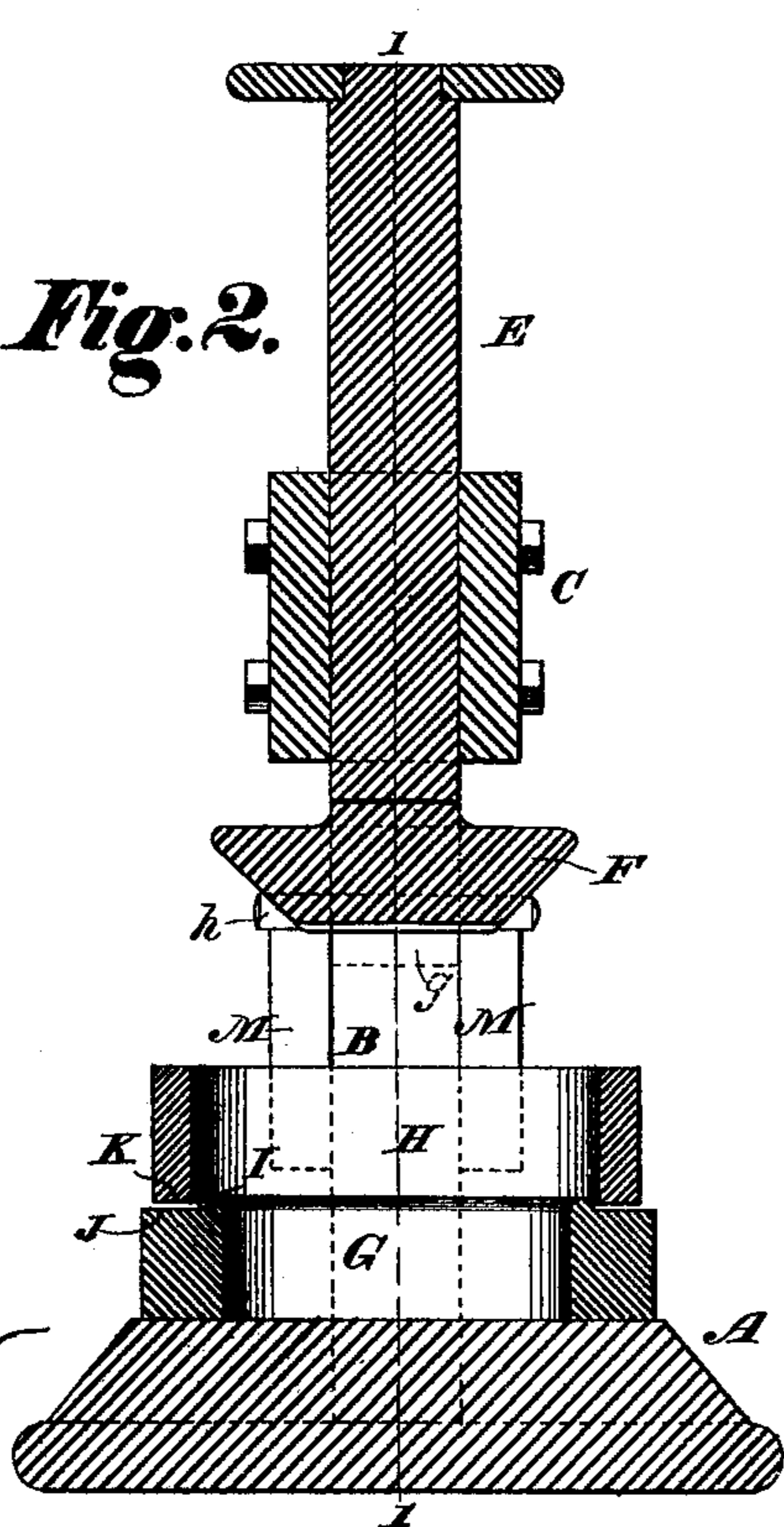


Fig. 2.



Witnesses.

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UNITED STATES PATENT OFFICE.

JAMES KIDD, OF HARRISBURG, ASSIGNOR OF ONE-HALF OF HIS RIGHT TO
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IMPROVEMENT IN MACHINERY FOR DISHING METALS.

Specification forming part of Letters Patent No. **185,547**, dated December 19, 1876; application filed
September 23, 1876.

To all whom it may concern:

Be it known that I, JAMES KIDD, of Harrisburg, Pennsylvania, have invented a certain new and useful Improvement in Machinery for Dishing Metals, of which improvement the following is a specification:

It is the object of my invention to stamp or stretch a flat plate of steel, or of any other sufficiently ductile metal, into a dished or concave form, with any desired outline of the concave, and with a surrounding flange or strengthening-edge. I am thus enabled to form a vessel or other dished receptacle, having the full thickness of the metal at the bottom to endure wear and afford strength, while the sides and ends will be thinner than the original plate, thus insuring the requisite strength and durability without unnecessary weight and waste of material, and the edge will be re-enforced by the flange of substantially the full strength of the original plate or sheet of metal, and have the proper strength and substance for resisting blows, and for maintaining the outline of the vessel by preventing it from being bent.

To attain this object my invention consists in a novel mechanism for clamping and holding a plate or sheet of metal around the edge, while a dishing-ram acts upon the plate and draws or stretches the metal between and from the bottom of the vessel and the edge or flange.

In the accompanying drawing, which forms part of this specification, I have shown my invention with a dishing-ram shaped to form a wheelbarrow-tray.

Of this machine, Figure 1 is a side view, partly in section on the line 1 1 of Fig. 2, which is a vertical transverse section thereof on the line 2 2 of the preceding figure.

Upon a strong bed-plate, A, I fix a pair of heavy uprights, B B, with a cross-piece, C, in which cross-piece I provide proper bearings for the support of a piston or carrier, E, which moves up and down in the bearings. To the lower end of the piston E I secure (by any of the well-known devices for securing hammer-heads to the pistons of steam-hammers) a ram or counter-die, F. This ram or counter-die is detachable, so that it may readily be removed

whenever a change is desired to be made from one form of vessel to another. The under surface of the ram or die is the counterpart of the interior shape to be given to the vessel.

Within the frame already described, and under the ram F, I properly secure upon the bed-plate A the lower section or half G of a clamp, and above this I place, in its proper relative position, the upper part or section H of the clamp. The clamp-sections G and H are both removable, so that they may be changed for any desired alteration in the form of the work; but the lower half G is firmly secured in place, while the upper half moves up and down upon guides on the uprights B B. This movement may be effected by hand by means of levers, or by hydraulic pressure.

It is only requisite that the movable clamp-section H should have a sufficient range of vertical movement to admit of its being raised high enough for the sheet or plate of metal to be inserted, and for the dished vessel to be removed from between the two parts of the clamp.

Means are provided for holding the clamp-section H down upon the plate or sheet of metal. These means consist, in the instance shown, of the slots *g g* and wedges *h h*. The lower section G of the clamp is an annulus, its depth being equal to the greatest depth to be given to the dished vessel, with a proper allowance for the thickness of the sheet or plate to be dished. The upper surface of this annulus has a bead, I, around it, inclosing a space the exact counterpart of the under surface of the ram or die F. Outside of this bead the clamp-section G has a plane surface, J, of somewhat greater width than the flange to be left around the dished vessel. The upper section H of the clamp is also an annulus, the under surface K of which is plane, and fits snugly around the outside of the bead I when brought down upon the section G, so that the sheet or plate of metal will be firmly held upon the plane surface J by the plane surface K.

The operation of dishing a flat plate by my machine is as follows: The flat plates or sheets of metal are cut to a size and outline shape,

conformable to those of the vessel to be formed and brought to a proper heat. A sweat heat or a white heat I find best. The ram F being lifted, and the clamp-section H being raised, I place the hot sheet upon the lower section G of the clamp, bring the clamp H down upon it, and secure it firmly, so that the sheet or plate is cramped between the plane surfaces J and K, the ram is then brought down upon the plate and forces the central portion of the plate down within the clamp-section G, (more or less, according to the shape of the ram,) drawing the sides of the plate thinner between the line at which it is clamped between the surfaces J and K, and the central line defined by the under surface of the ram, leaving it of a shape the counterpart of the under surface of the ram. This completes the operation. The ram is raised, the clamp-section H released and lifted up, and the dished vessel is removed. It only requires, further, to have the edge sheared off for a proper finish.

I contemplate making the interior of the clamp-section G the counterpart of the under surface of the ram, instead of giving it simply straight walls, as shown in the drawings.

Where I use very thin sheets of metal I am enabled by this mechanism to stamp three or four, or even more, at once, simply securing them together temporarily by a rivet at each

corner, so as to prevent the middle ones from slipping between the upper and lower plates during the action of the ram. I find also that this is better by reason of the plates retaining the heat better than where they are stamped singly.

For operating the ram and for holding the clamps I contemplate using hydraulic power, the application of which to my improved machine is a well understood matter of simple construction, and need not be herein described. I also contemplate using any of the various other well-known means of applying the required forces; but such applications form no part of the invention herein claimed.

Having thus described the nature and objects of my invention, what I claim as new, and desire to secure by Letters Patent, is—

The combination, substantially as hereinbefore set forth, of clamp-section which grasp and hold the edge of the plate to be dished, one of them having a bead, as shown, and a ram forming a counterpart of the shape desired, and acting upon the plate while held by the clamp.

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Witnesses:

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